

Physics 1501A - Enriched Introductory Physics I - Fall 2021

This course will cover the same material as other first-year physics courses, but with an eye to how these simple principles apply to and define many fascinating phenomena in our Universe. We will explore questions like...

- How and why does NASA use the gravity of a planet to send its spacecraft efficiently on to their destinations?
- How much do we know about the nature of space and time?
- How does a car transmission work and why is it needed?
- What is energy, and why is our society so concerned about running out of it?

If these questions sound interesting, then this is the first year physics course for you.

Calendar description: A calculus-based laboratory course for students intending to pursue further studies in science, particularly the physical sciences. Newton's laws, energy, linear momentum, rotations and angular momentum, gravitation and planetary motion.

Antirequisite(s): Physics 1021, 1028A/B, 1301A/B, 1401A/B, the former Physics 1020, 1024, 1026.

Prerequisite(s): Grade 12U Physics (SPH4U); Grade 12U Calculus and Vectors (MCV4U) or Mathematics 0110A/B.

Corequisite(s): Calculus 1000A/B or 1100A/B or 1500A/B or Applied Mathematics 1413.

Extra Information: 3 lecture hours, 3 laboratory/tutorial hours, 0.5 course.

Note: This course, together with Physics 1502A/B, is a suitable prerequisite for all modules in the Faculty of Science, for all modules offered by the basic medical science departments and for professional schools having a Physics requirement.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Instructor:

Paul Wiegert

Professor

Room 238, Physics and Astronomy Building (PAB)

You can reach me via e-mail at pwiegert@uwo.ca. When contacting me by e-mail, please use your UWO e-mail account. Other accounts (such as gmail and yahoo) are often tagged as spam and may not reach me.

Office Hours: My usual office hours will be announced on the OWL website, and may be held in person or virtually via zoom. You are welcome to drop by at the posted times. In held online, the zoom meeting will have a waiting room so you will not immediately connect if someone is already in the

zoom meeting with me, but you will be admitted as soon as possible. If the usual office hours' time is not convenient, you can also send me e-mail if you would like to arrange an alternate meeting time.

Teaching Assistants: The TA(s) for this course, their contact info and their office hours will be posted on the course web site.

Format: This course is expected to take place primarily in person, however it may transition to an online format if required. The class will take place in room PAB 148 on Mondays, Wednesdays and Fridays 9:30-10:20 PM. Tutorials will take place on some Mondays 3:30-5:20PM in PAB 117. The first class will start at 9:30 AM on Wednesday Sept 8.

The online portion will be conducted primarily through Western's OWL Learning Management System. Students should check OWL (<http://owl.uwo.ca>) on a regular basis for news and updates. If students need assistance with OWL, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

Tutorials: Tutorial sessions are computer-based sessions where you will get to work through and experiment with physics computer simulations. Physics 1501A has tutorials hosted by the course's Teaching Assistants. They usually occur on the weeks between labs. You should bring a laptop to the tutorials if you can. The tutorials will be held on Monday afternoons about every second week. The schedule is subject to change but four tutorials are expected to take place at 3:30PM to 5:30PM (note: one hour later than the lab start time!) on Sep 20, Oct 4, Nov 15 and Nov 29 in room PAB 117.

The tutorials are expected to take place in-person but may instead take place via zoom, should conditions require it. In tutorials, after some introductory material from the instructor or TAs, students will then break up into small groups to work on the tutorial worksheets together in real-time. You are expected to attend tutorials.

Laboratories: *In order to pass the course, you must pass the laboratory component!*

Labs will be held on some Mondays, 2:30-5:30 pm in the Materials Science Addition (MSA) Building. A laboratory orientation lecture will be posted on the OWL site by the first week of September. You must visit the course OWL site and familiarize yourself with the contents of this lecture before attending your first lab session. Labs are expected to be done in-person (except for the first Measurement lab, see more below) at this time but could transition to an online format.

The Physics 1501A laboratory timetable will be posted on the course OWL site. You must find your correct lab section, lab subsection, and the correct laboratory timetable before attending the first lab. Please attend the correct lab class on the correct date, as we do not give permission to attend lab classes outside your laboratory schedule. If you have difficulty following the timetable scheduled for your lab sub- section, please contact the laboratory coordinator at physlab1@uwo.ca

There are four labs to be completed. The first lab on Measurement, is to be done entirely online through the OWL website. It is due Sun Sep 19 at 11:59 pm. There are also three in-person labs. These are tentatively scheduled for Monday Sep 27, Monday Oct 18 and Monday Nov 8. The due dates are

usually one week later via online submission through Gradescope, and the lab deadlines are expected to be Sunday Oct 3 at 11:59pm, Sunday Oct 24 at 11:59pm and Sun Nov 14 at 11:59pm.

Other lab information: There are different first year laboratory manual packages which need to be purchased from the Western bookstore. Information on how to purchase the Lab Manual will be posted on the course OWL website. Note that Physics 1501A has the same package as Physics 1301A and Physics 1401A but it is different from Physics 1028A. Make sure you buy the correct laboratory package since it is not refundable.

Quizzes: The course will include two quizzes. Date, time, and details are subject to change but are expected to be on Oct 13 and Nov 22 during the usual class time.

Textbook: The required textbook is the online version of University Physics with Modern Physics, 15th edition, by H. D. Young and R. A. Freedman (Pearson) available from the Western Bookstore. The e-textbook will be required for some of the course readings so other editions or textbooks cannot be substituted. A paper copy of the textbook may be ordered separately for an additional fee but is not required. Also required is purchasing access to the Mastering Physics website. The textbook and MasteringPhysics will be available from the Western bookstore as a single bundle: information on how to purchase the textbook and MasteringPhysics access will be posted on the course website.

MasteringPhysics: The textbook publisher provides a web-based instructional platform called MasteringPhysics which is required for this course. A portion of the class marks will come from performing Mastering Physics assignments. Access to MasteringPhysics will be included with your textbook if you buy it through the Western bookstore.

Students will need to set up an account on MasteringPhysics, and will need two pieces of information to do so: the course ID is `wiegert52522`; and their UWO student identifier from their UWO email (for example, if your email is jsmith22@uwo.ca then your student ID is `jsmith22`). Students should log into <https://www.pearsonmylabandmastering.com/northamerica/masteringphysics/> and create an account with their student ID and join the course ID above. Creating an account with an incorrect login ID may result in your grades not linking properly with the university grade book.

Perusall: A portion of the class marks will be assigned for performing the readings, for posing and answering questions, engaging with other students and making well-thought out comments on the Perusall website on a weekly basis. This is done via the Perusall tool which will be accessible from the course OWL site. Students do not need to create a separate Perusall account.

Zoom: Participation in online activities, should they be necessary, requires a webcam/microphone and a stable internet connection. If you anticipate any problems along these lines please contact your professor. A link will be provided to any zoom events, which should be clicked on and the zoom app downloaded at the appropriate time. Students do not need to create a separate Zoom account.

Professionalism and netiquette: It is expected that students will display the same standard of behaviour in all online interactions as they would in the regular classroom. Video interactions will be done in respectful language, in a quiet environment, without the presence of non-class members in the background, in appropriate clothing, etc. Failure to abide with these requirements may result in the

barring of the student from such interactions and the loss of any associated marks. For a refresher on netiquette see <https://www.rasmussen.edu/student-experience/college-life/netiquette-guidelines-every-online-student-needs-to-know/>

The integrity of the course and the privacy of its participants is expected to be preserved. It is illegal to distribute, share in any public domain, or sell any course materials without prior written consent of the instructor.

Gradescope: Written tutorial worksheets and lab write-ups in the course will be submitted via the gradescope.ca website. Students will receive an email when their accounts are set up with login information. The gradescope.ca website should be accessed directly from the OWL course website. Gradescope will accept scans, annotated PDFs or photos of handwritten assignment pages. These will be accessed by the TAs to grade, and marks and feedback will be returned to the student via Gradescope.

Calculators: Though no specific calculator brands or models are required for tests and exams in this course, Wi-Fi-enabled devices *cannot* be used (e.g. you cannot use your smartphone as a calculator)

Grading:

Quizzes: $2 \times 10\% = 20\%$

Assignments (MasteringPhysics): 12.5%

Tutorial worksheets (Gradescope): 12.5%

Readings (Perusall): 15%

Final exam: 30%

Laboratories: 10%

Note: in order to pass this course, you must obtain (1) a grade of at least 50% over all course components AND (2) a grade of at least 50% on the Laboratories. If you fail to obtain a grade of 50% on either one, this failing grade will be adopted as your final course grade. In simpler terms, you have to pass the lab to pass the course.

Please note: The Department of Physics and Astronomy may, in exceptional cases, adjust the final course marks in order to conform to Departmental policy.

Student Absences

Academic Consideration for Student Absences

Students who experience an extenuating circumstance (illness, injury or other extenuating circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

1. Submitting a Self-Reported Absence (SRA) form provided that the conditions for submission are met. To be eligible for a Self-Reported Absence:
 - an absence must be no more than 48 hours
 - the assessments must be worth no more than 30% of the student's final grade
 - no more than two SRAs may be submitted during the Fall/Winter term

2. For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to the Academic Counselling office of their Faculty of Registration.
3. Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Note that in all cases, students are required to contact their instructors within 24 hours of the end of the period covered, unless otherwise instructed in the course outline.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For the policy on Academic Consideration for Student Absences Undergraduate Students in First Entry Programs, see:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf

and for the Student Medical Certificate (SMC), see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under Special Examinations).

Accommodation and Accessibility

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf

Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>

In accordance with policy, https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Tests and examinations in this course could be conducted using a remote proctoring service in the event of a health lockdown. By taking this course, you are consenting to the use of this software and acknowledge that you may be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at (519) 661-2147 if you have any questions regarding accommodations.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual

support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western (<http://www.health.uwo.ca/mentalhealth>) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, <http://westernusc.ca/services>.

This course is supported by the Science Student Donation Fund. If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Counselling site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the Chair of the Department or email the Science Students' Council at ssc@uwo.ca.

This course outline is subject to change. Last updated Tuesday, August 31, 2021.